

IUL Vetoes

Nelson Christensen

Russ Bainer

Carleton College

Strategy

- Have list of inspiral “events” from Duncan and findchirp (LHO 2 km)
- Trying to find a tool that finds simultaneous events in PEM or other interferometer channels

Varying Correlations

- Tried CorrMon (Adrian Ottewill)
- Measure correlation between AS_Q and another channel
- 8 s intervals, looking for abnormal increases
- **RESULT:** Difficult and not successful in seeing events simultaneous with findchirp “inspiral events”

NonMon – A correlated glitch tool

- Jacob Fenton (Reed College undergraduate)
- Program characterizes noise level –300 s
- Specify magnitude of glitch (2σ , 3σ , etc) and how many times per second this threshold is exceeded

Configuration File

Parameter Statfile e7POBdstats.dat
Parameter Outputfile e7POBd.dat
Parameter Secondquit 3600
Parameter Correlatedglitchfile e7POBdcorr.dat
Parameter Debug 2

Channel H2:LSC-POB_Q	8.0 0.001
Channel H2:LSC-AS_Q	8.0 0.001

Output

```
#The monitored channels are:
Channel H2:LSC - POB_Q 8 0.001
Channel H2:LSC - AS_Q 8 0.001
#This file lists all seconds in which multiple monitored channels
#showed glitches.
# The start time is: December 30, 01 at 17:21:23 GMT, which is
Starttime 693768096
#The output format is:
#Glitchtime
# <channname> < - a> <#devsamps> <trigger> (amplitude glitch)
# or
# <channname> < - f> <secpowerave> <avepower> <thresholdpower> (fourier glitch)

693768563
  H2:LSC - POB_Q - a 304 16
  H2:LSC - AS_Q - a 67 16
693768583
  H2:LSC - POB_Q - a 93 16
  H2:LSC - AS_Q - a 28 16
693768603
  H2:LSC - POB_Q - a 100 16
  H2:LSC - AS_Q - a 61 16
693768626
  H2:LSC - POB_Q - a 1063 16
  H2:LSC - AS_Q - a 49 16
693768632
  H2:LSC - POB_Q - a 835 16
  H2:LSC - AS_Q - a 38 16
693768634
  H2:LSC - POB_Q - a 979 16
  H2:LSC - AS_Q - a 46 1 6
693768665
  H2:LSC - POB_Q - a 179 16
  H2:LSC - AS_Q - a 35 16
693768723
  H2:LSC - POB_Q - a 106 16
  H2:LSC - AS_Q - a 61 16
```

LIGO-G020082-00-Z

Where can one also see Inspiral “Events”?

Sometimes see it in seismometers

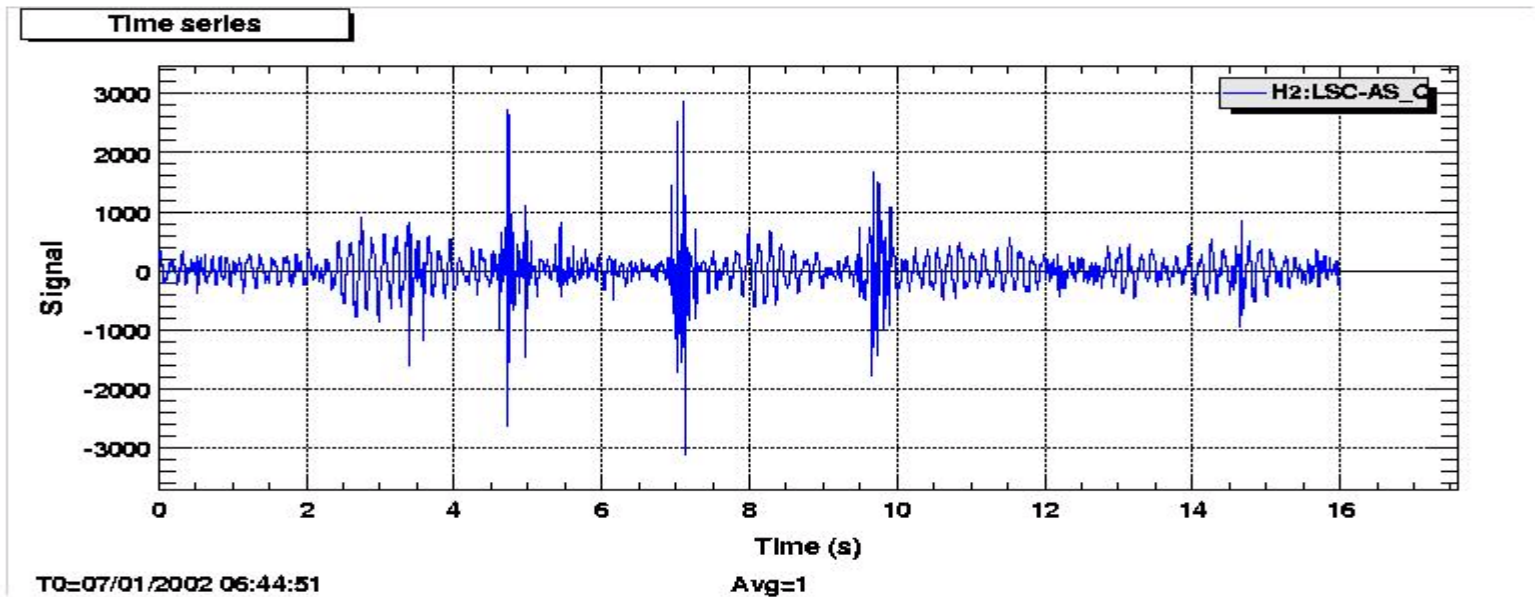
LSC-POB_Q

LSC-MICH_CTRL

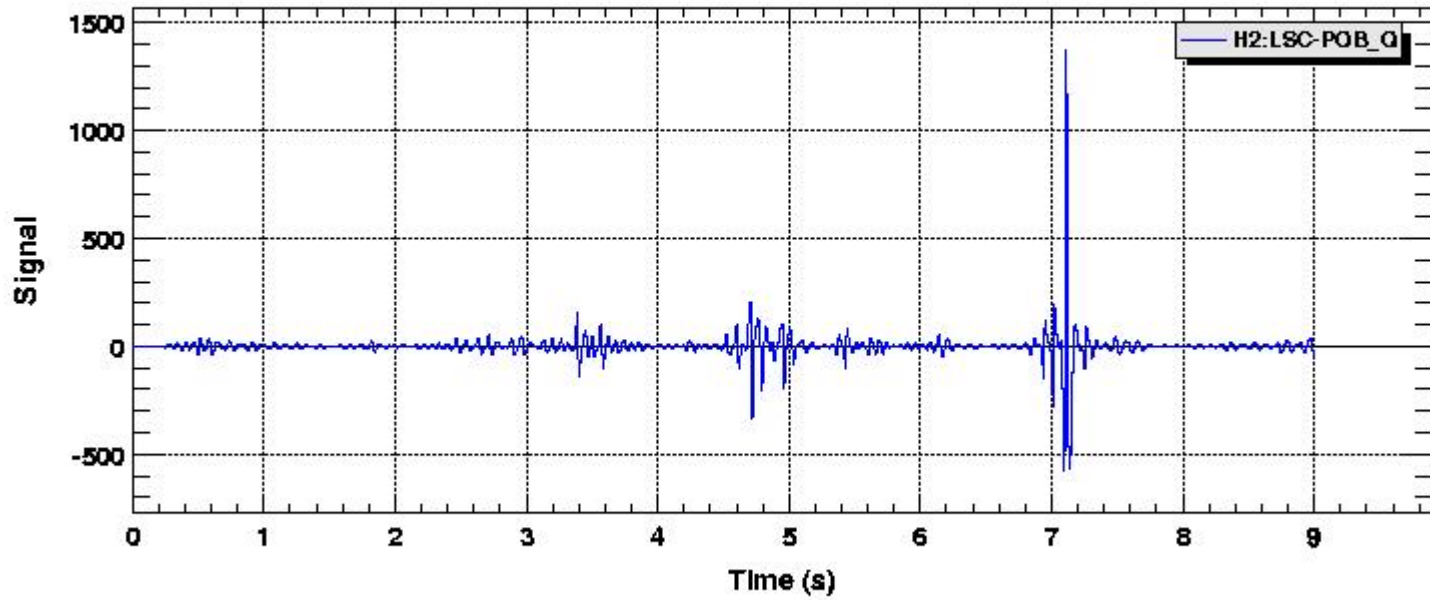
ASC-QPDX(Y)_(P, Y, DC)

Sample “Events”

findchirp event at 694421111



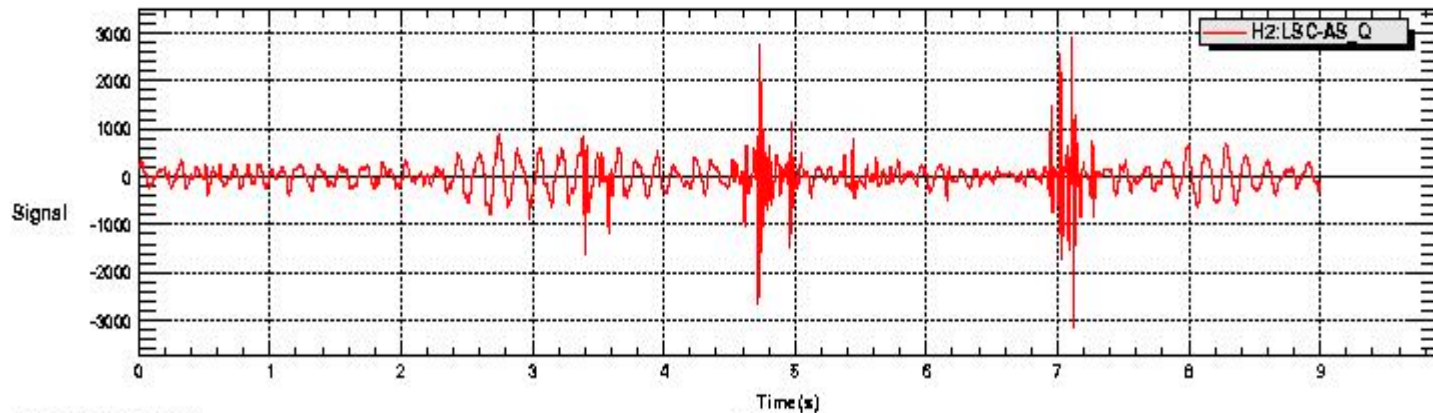
Time series



T0=07/01/2002 06:44:51

Avg=1

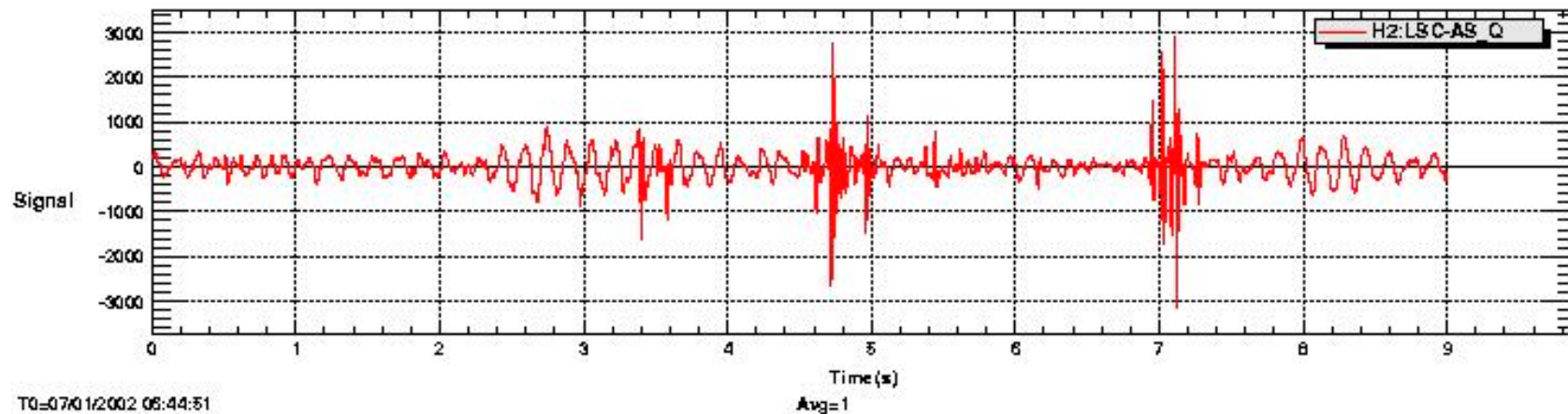
Time series



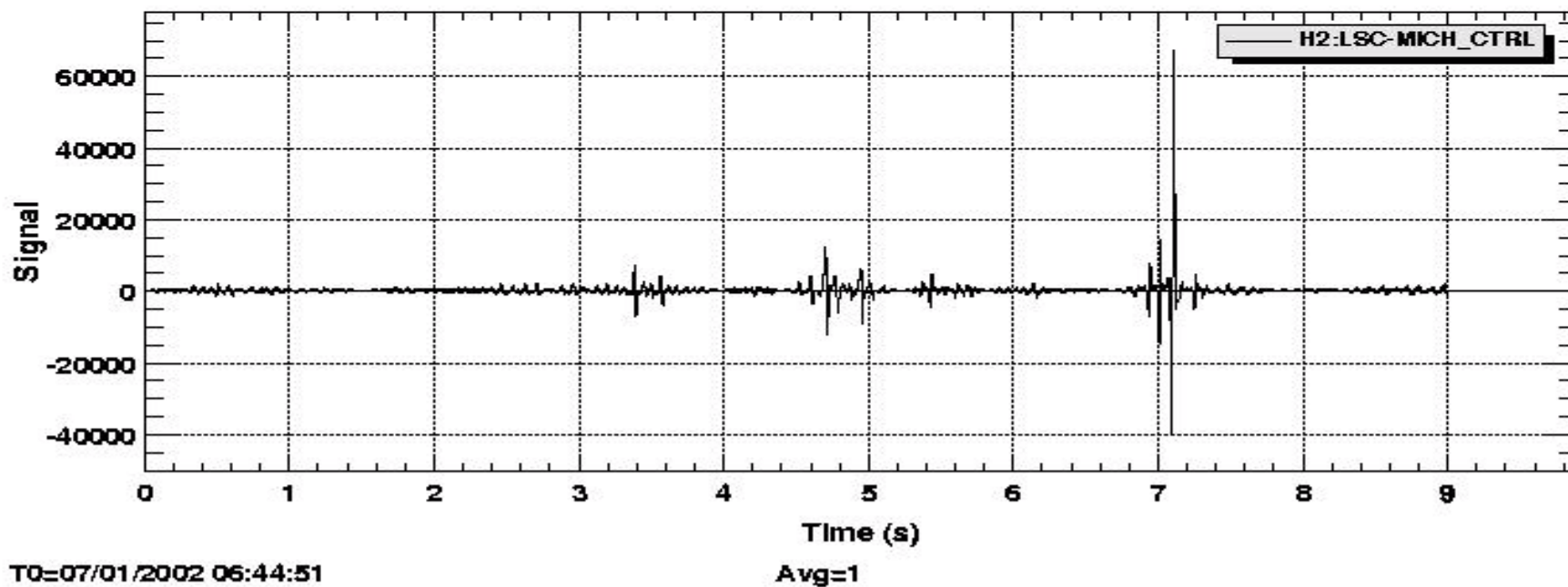
T0=07/01/2002 06:44:51

Avg=1

Time series

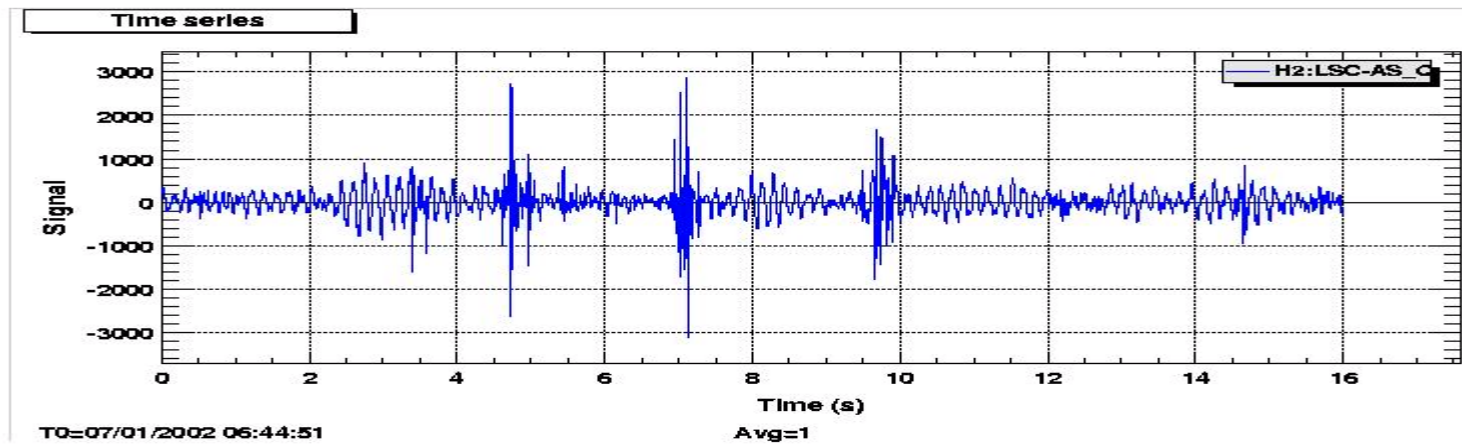
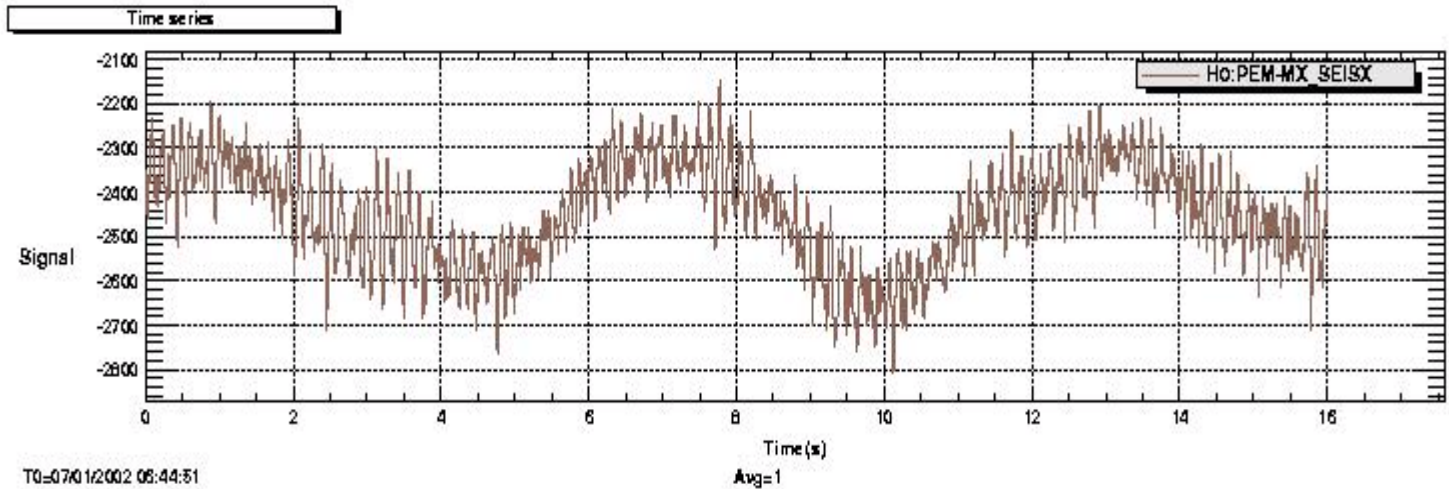


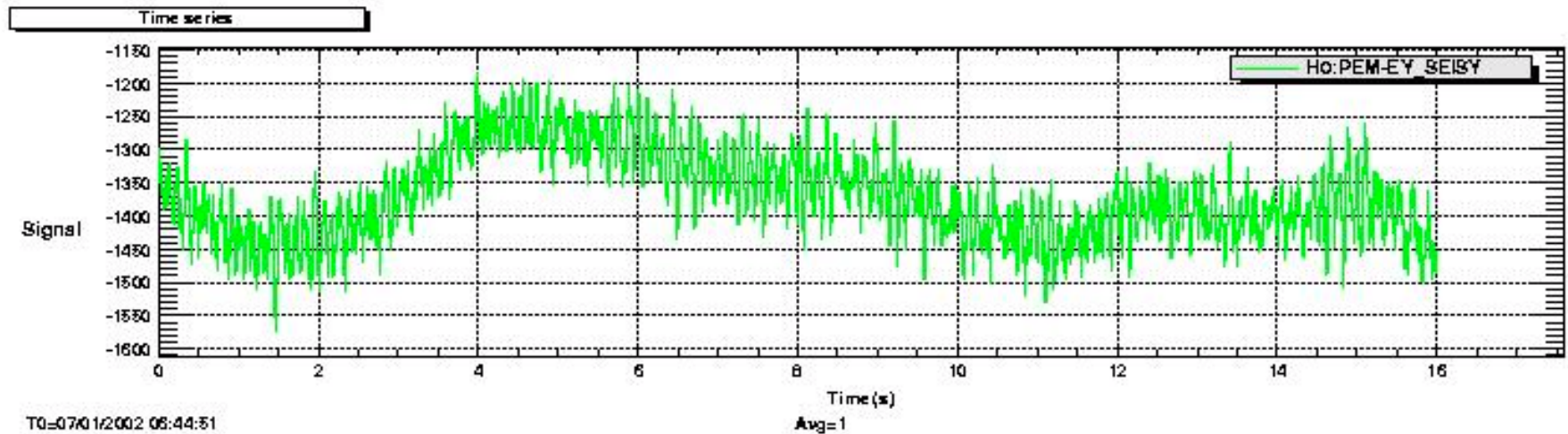
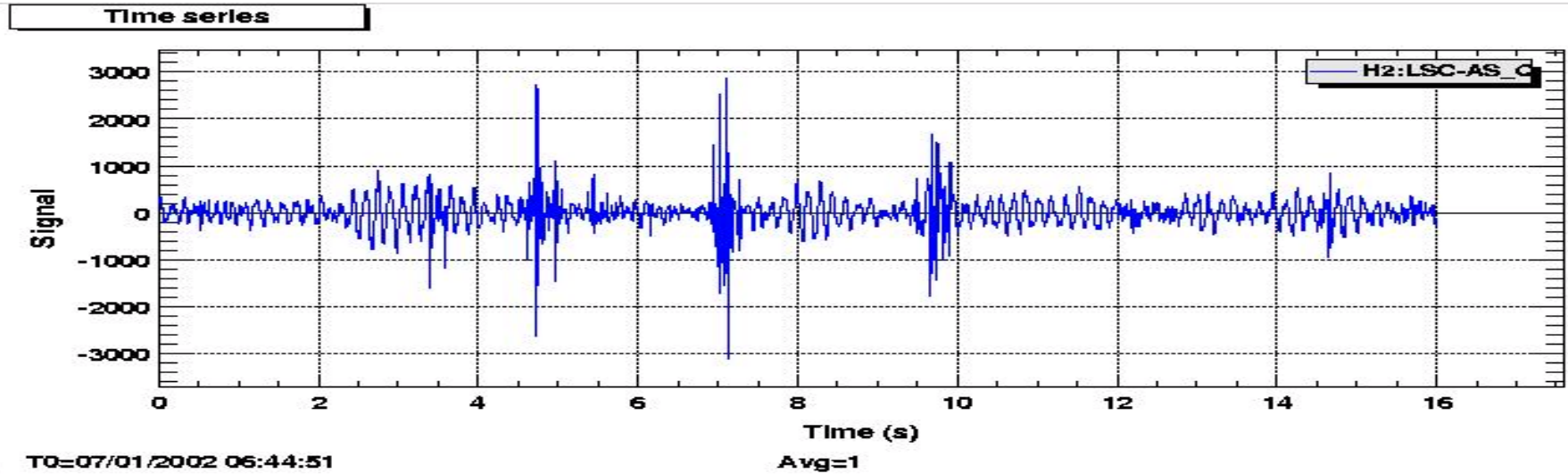
Time series



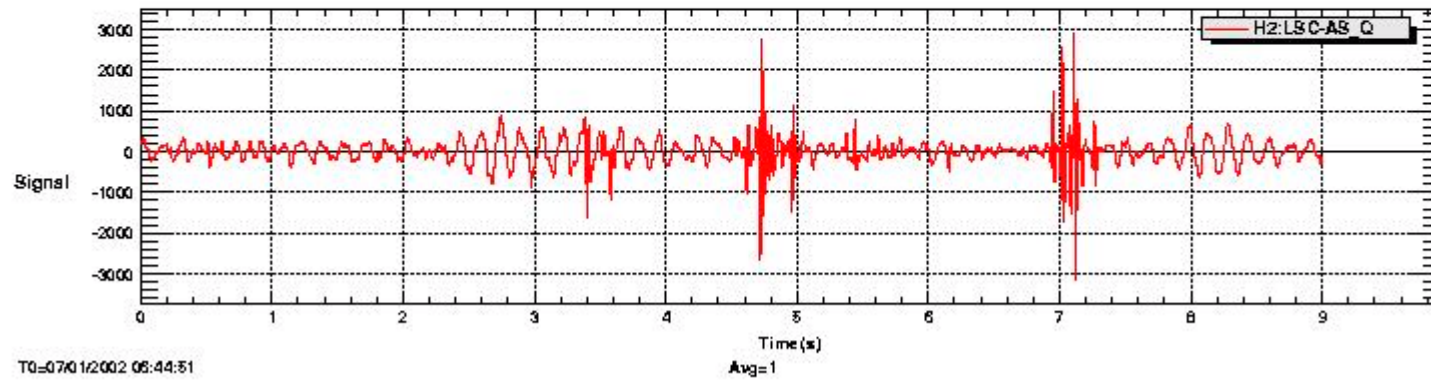
Consistent with Julien Sylvestre's Observation

- Julien found H2:LSC-MICH_CTRL could be used to predict glitches in H2:LSC-AS_Q
- PSL signal FSS_RCTRANS_PD_F noise correlated with L1:LSC-AS_Q glitches. Have not seen in H2

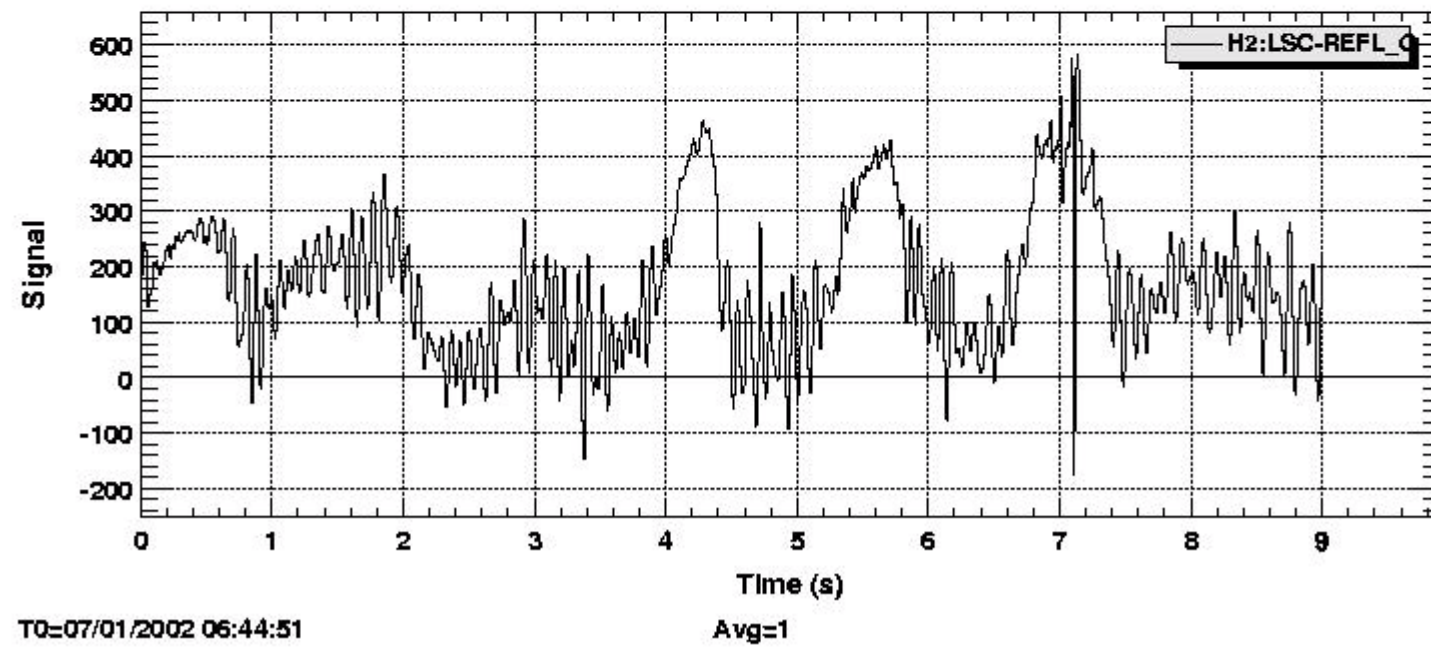




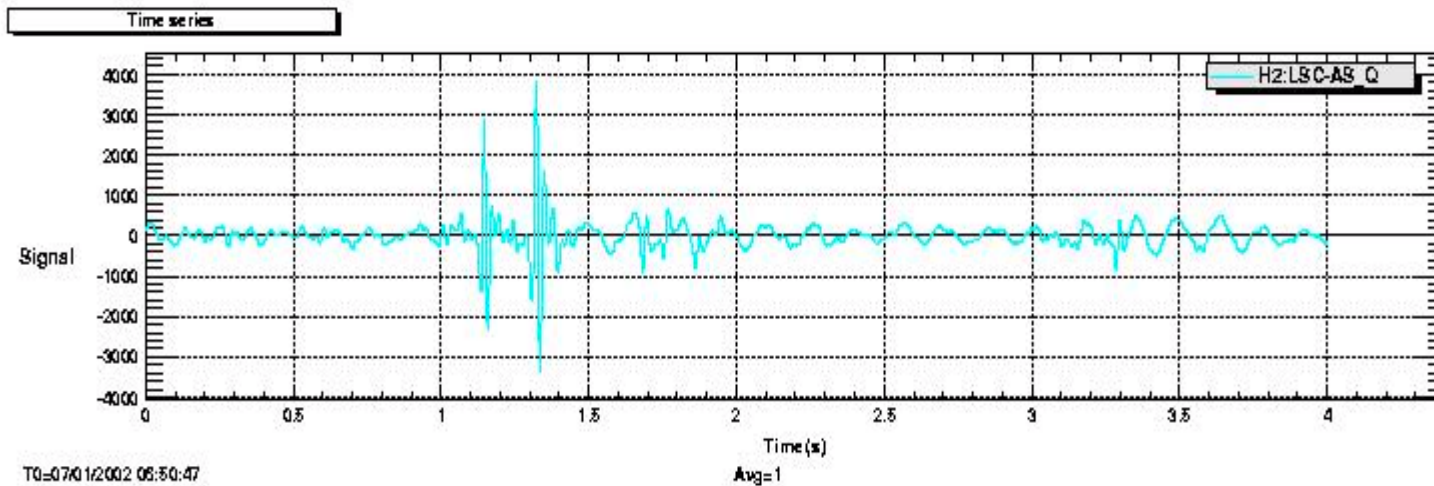
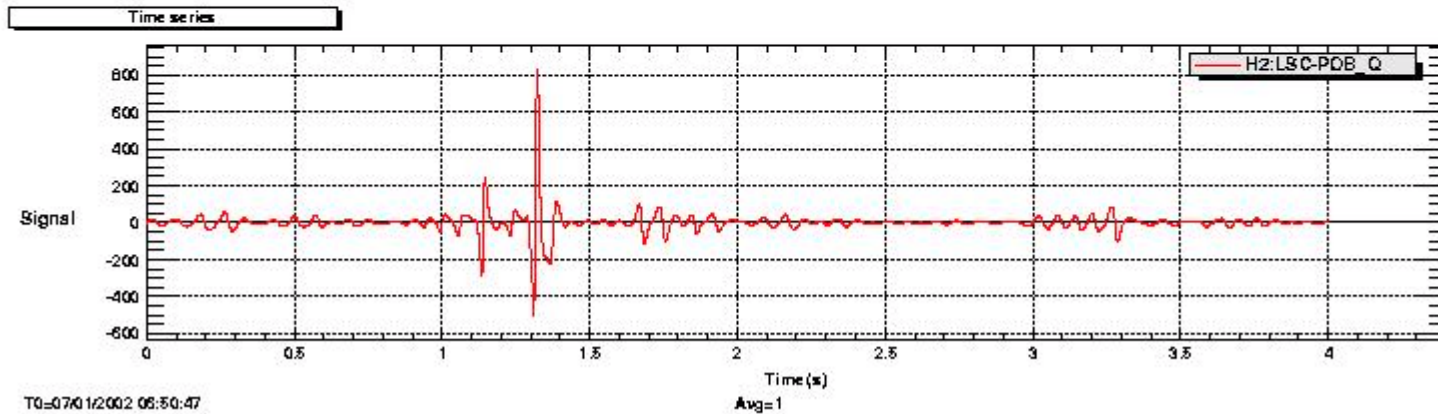
Time series



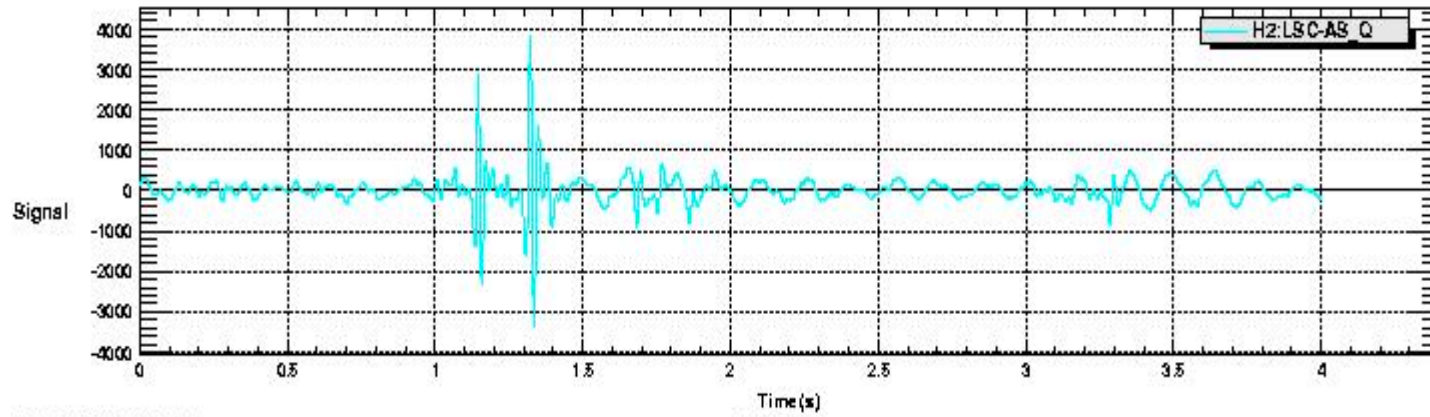
Time series



findchirp event 694421462



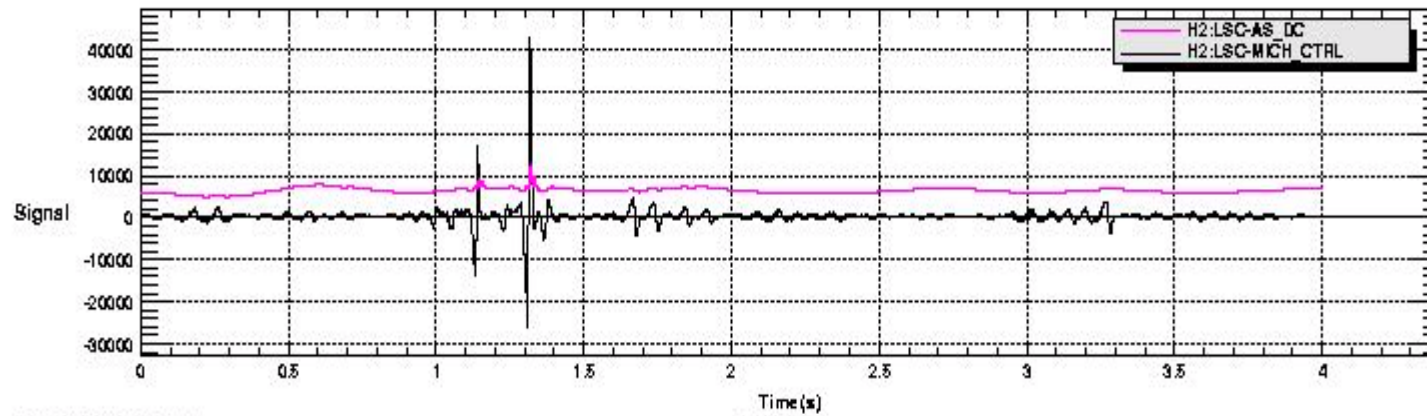
Time series



T0=0701/2002 08:50:47

Avg=1

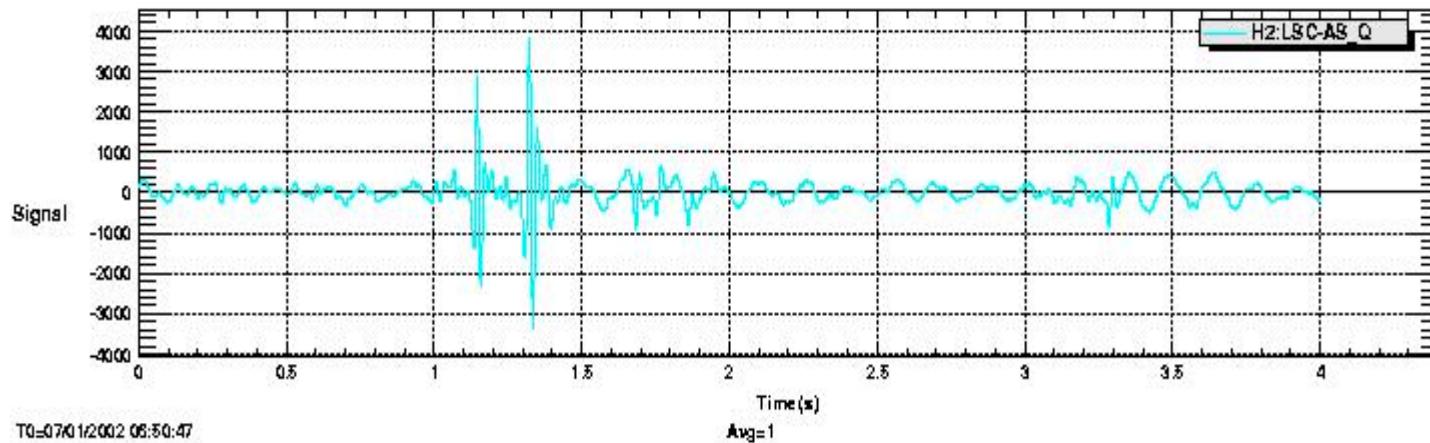
Time series



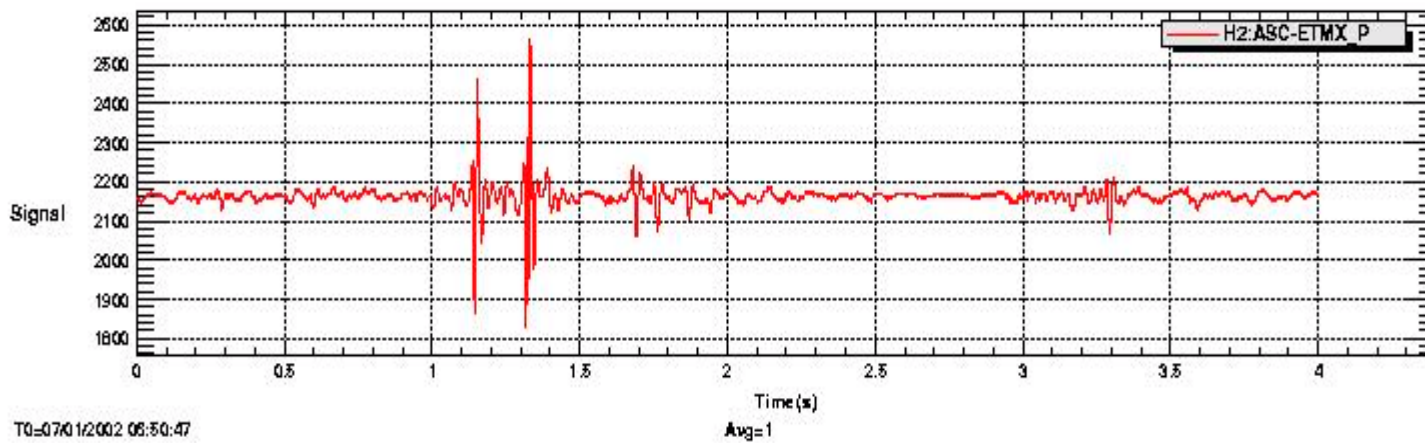
T0=0701/2002 08:50:47

Avg=1

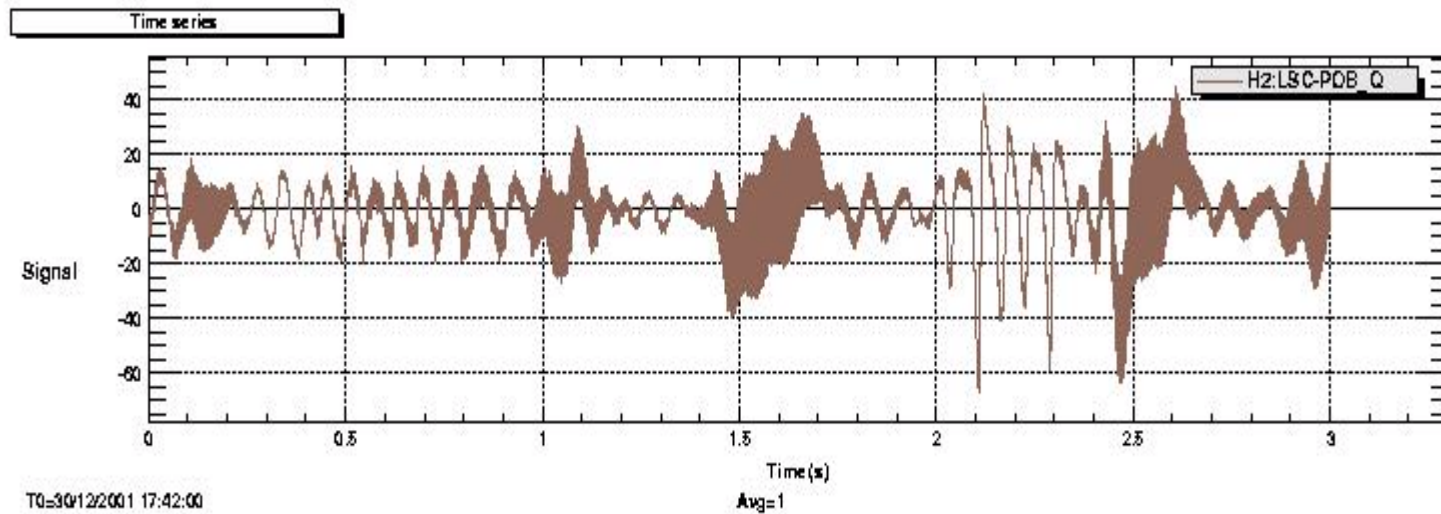
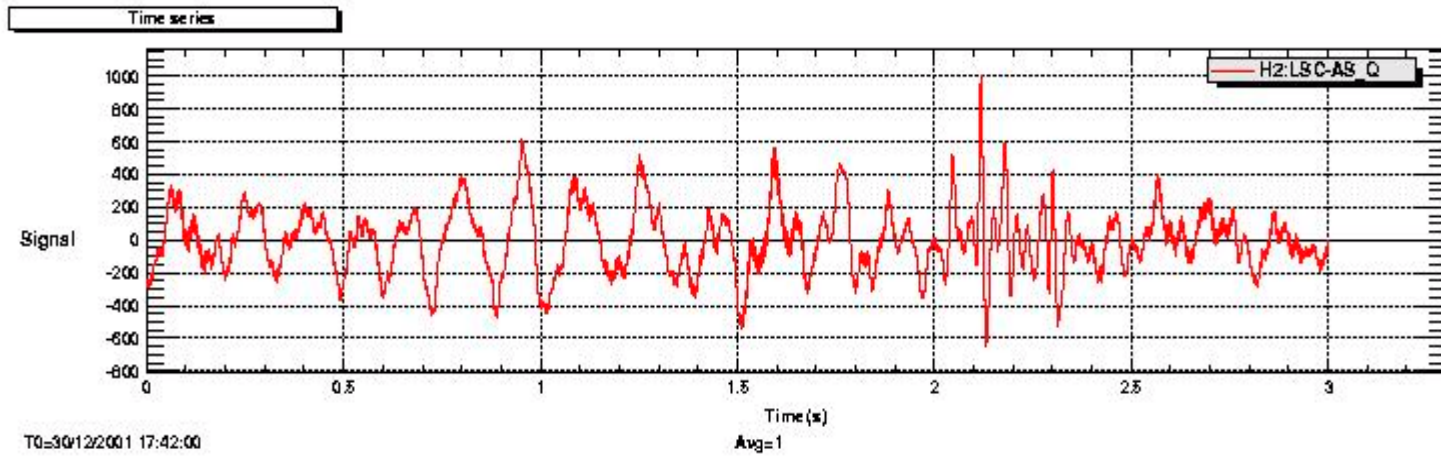
Time series

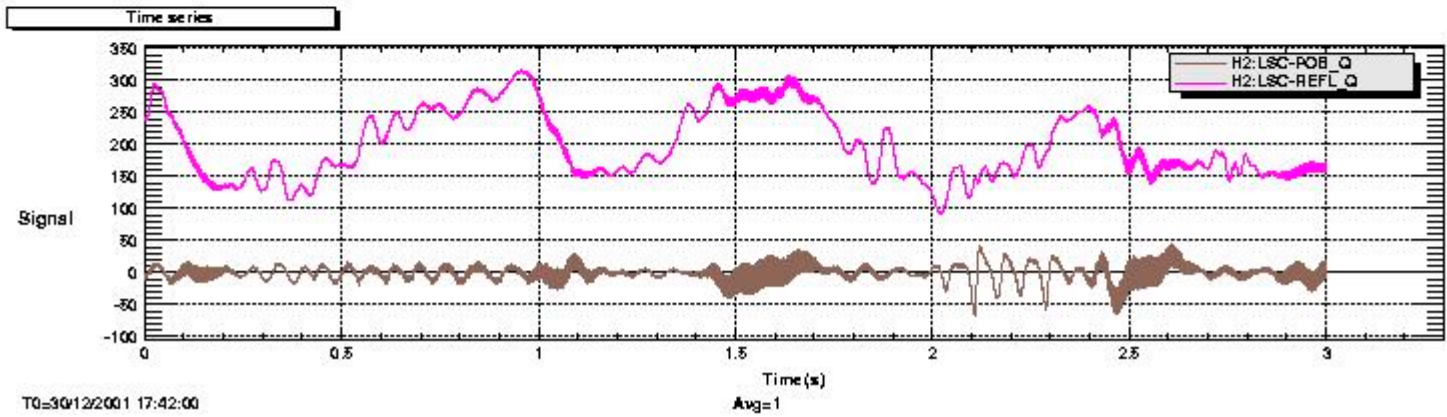
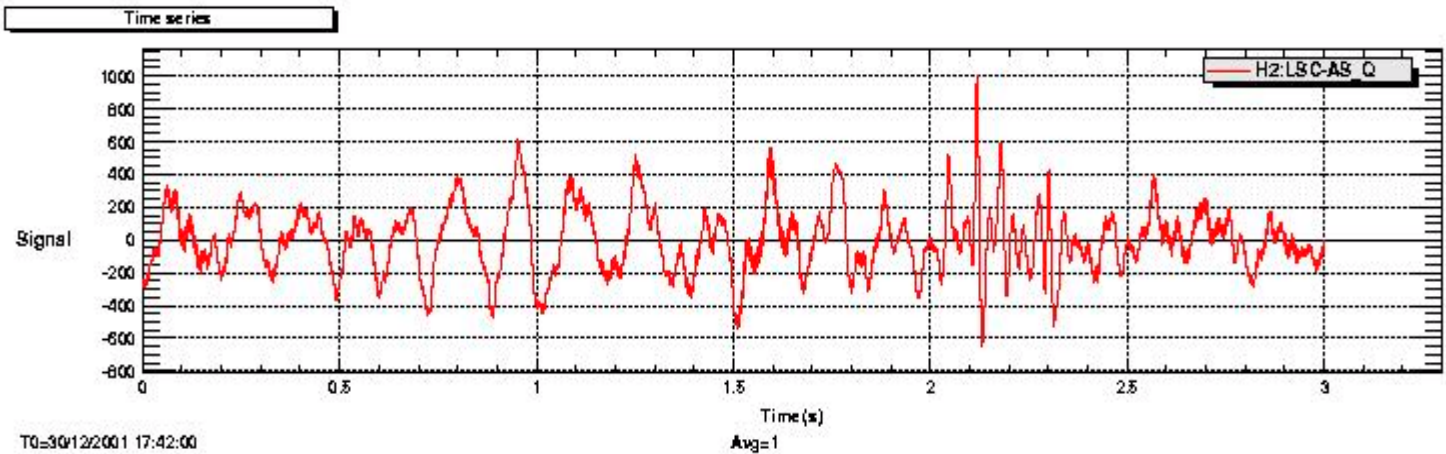


Time series

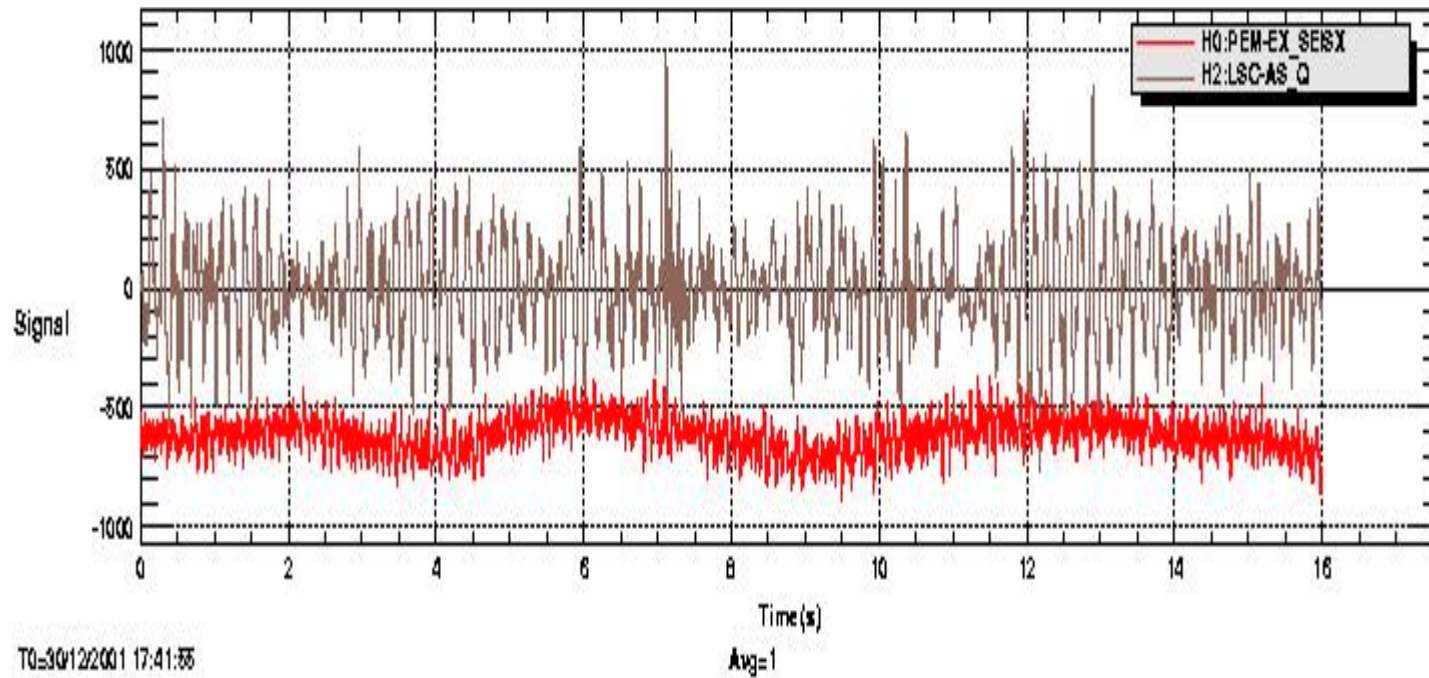


findchirp event 693769335





Time series



NonMon Results: H2:LSC-AS_Q and H2:LSC-POB_Q

- 8σ and $0.001 * 16384 = 16$ points per sec;
77 coincidences in 3600 sec, individual 257
events for AS_Q and for 292 POB_Q
- 4.5σ and $0.001 * 16384 = 16$ points per sec;
343 coincidences in 3600 sec, individual
602 events for AS_Q and for 807 POB_Q

NonMon sees the Inspiral “Events”. Lots and lots of coincidences with POB_Q and MICH_CTRL

H2:LSC-AS_Q with

LSC-POB_Q

LSC-MICH_CTRL

ASC-QPDX(Y)_(P, Y, DC)

Only sometimes does it register with seismometers